	Type	L #	Hits	Search Text	DBs
1	BRS	L1	29676	(hash\$3 AND (index OR indices OR key\$3) AND (compare\$ OR match\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
2	BRS	L2	800	((hash\$3 AND (index OR indices OR key\$3) AND (compar\$3 OR match\$3) AND (MAC NEAR3 Address\$3)) AND pointer\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
3	BRS	L3	2010	(hash\$3 AND (index OR indices OR key\$3) AND (compar\$3 OR match\$3) AND (MAC NEAR3 Address\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B

	Туре	L #	Hits	Search Text	DBs
4	BRS	L4	88	(search\$3 or retriev\$3 or register\$3) with (hash\$3) with index\$3 and (memory adj2 table\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
5	BRS	L5	735	(search\$3 or retriev\$3 or register\$3) with (hash\$3) with index\$3 and (memory same table\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
6	BRS	L6		1 and (memory adj3 table\$1) and hash\$3 and (index\$3 or entr\$3 or key\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B

	Туре	L#	Hits	Search Text	DBs
7	BRS	L7 ·	376	(search\$3 or retriev\$3 or register\$3) and (hash\$3) and index\$3 and (memory adj2 table\$1) and (collision\$3 or conflict\$3 or synonym\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
8	BRS	L8	227	(Mori-Masaya or Takatsu- Yoshihisa or Watanabe- Shinpei or Sunaga- Toshio).in.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
9	BRS	L9	4	1 and 8	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B

	Туре	L #	Hits	Search Text	DBs
10	BRS	L10	1065	(hash\$3 AND (index OR indices OR key\$3) AND (compare\$ OR match\$3)) and (memory adj2 table\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
11	BRS	L11	97	370/392,389,351,352,395,400 ,474.ccls. and 10	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
12	BRS	L12	688	(hash\$3 AND (index OR indices OR key\$3) AND (compare\$ OR match\$3)) and ((memory adj2 table\$1) and pointer\$1)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B

	Туре	L #	Hits	Search Text	DBs
13	BRS	L14	17	12 and 709/238,243,ccls.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
1.4	BRS	L15	32	12 and 711/216.220 ccls.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
15	BRS	L16	16732	hash\$3 AND (index OR indices OR key\$3 OR indexes OR entry OR entries) AND	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B

	Туре	L #	Hits	Search Text	DBs
16	BRS	L17		hash\$3 AND (index OR indices OR key\$3 OR indexes OR entry OR entries) AND (memory same (pointer\$1 and table\$1) and indirect\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
17	BRS	L18	118	17 and 707/1-10.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
18	BRS	L19	1439	indices OR key\$3 OR indexes OR entry OR entries) AND (memory same (addresses and	EPO;

	Туре	L #	Hits	Search Text	DBs
19	BRS	L20	87	17 and 707/1,3,10.ccls.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B
20	BRS	L21	537	indices OR key\$3) AND (compare\$ OR match\$3)) and (memory and (addresses and	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWEN T; IBM_TD B



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Scalable Hardware Memory Disambiguation for High ILP Processors Simha Sethumadhavan, Rajagopalan Desikan, Doug Burger, Charles R. Moore, Stephen W. Keckler

December 2003 MICRO 36: Proceedings of the 36th annual IEEE/ACM International Symposium on Microarchitecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(220.70 KB) Additional Information: full citation, abstract, cited by, index

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Unbounded page-based transactional memory

Weihaw Chuang, Satish Narayanasamy, Ganesh Venkatesh, Jack Sampson, Michael Van Biesbrouck, Gilles Pokam, Brad Calder, Osvaldo Colavin October 2006 ACM SIGARCH Computer Architecture News, Volume 34 Issue 5 **Publisher: ACM** 

Full text available: pdf(242.68 KB) Additional Information: full citation, abstract, references, cited by, index terms

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**Spatial Memory Streaming** 

Stephen Somogyi, Thomas F. Wenisch, Anastassia Ailamaki, Babak Falsafi, **Andreas Moshovos** 

June 2006 ISCA '06: Proceedings of the 33rd annual international symposium on Computer Architecture

**Publisher: IEEE Computer Society** 

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Exploiting frequent field values in java objects for reducing heap memory

requirements

Guangyu Chen, Mahmut Kandemir, Mary J. Irwin

June 2005 **VEE '05:** Proceedings of the 1st ACM/USENIX international conference

on Virtual execution environments

Publisher: ACM

Full text available: pdf(635.47 KB) Additional Information: full citation, abstract, references,

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The capabilities of applications executing on embedded and mobile devices are strongly influenced by memory size limitations. In fact, memory limitations are one of the main reasons that applications run slowly or even crash in embedded/mobile devices. ...

Keywords: Java virtual machine, frequent field value, garbage collection, heap

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Weihaw Chuang, Satish Narayanasamy, Ganesh Venkatesh, Jack Sampson, Michael Van Biesbrouck, Gilles Pokam, Brad Calder, Osvaldo Colavin November 2006 ACM SIGPLAN Notices, Volume 41 Issue 11

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Memory forwarding: enabling aggressive layout optimizations by

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Chi-Keung Luk, Todd C. Mowry

May 1999 ACM SIGARCH Computer Architecture News, Volume 27 Issue 2

**Publisher: ACM** 

Additional Information: full citation,

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abstract. references, cited by, index terms

By optimizing data layout at run-time, we can potentially enhance the performance of caches by actively creating spatial locality, facilitating prefetching, and avoiding cache conflicts and false sharing. Unfortunately, it is extremely difficult to guarantee ...

Bratin Saha, Ali-Reza Adl-Tabatabai, Quinn Jacobson

December 2006 MICRO 39: Proceedings of the 39th Annual IEEE/ACM

International Symposium on Microarchitecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(325.24 KB) Additional Information: full citation, abstract, references,

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Transactional memory provides a concurrency control mechanism that avoids many of the pitfalls of lock-based synchronization. Researchers have proposed several different implementations of transactional memory, broadly classified into software transactional ...

Informing memory operations: memory performance feedback

mechanisms and their applications

Mark Horowitz, Margaret Martonosi, Todd C. Mowry, Michael D. Smith May 1998 ACM Transactions on Computer Systems (TOCS), Volume 16 Issue 2 **Publisher: ACM** 

Full text available: pdf(344.74 KB) Additional Information: full citation, abstract, references, cited by, index terms, review

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**Keywords**: cache miss notification, memory latency, processor architecture

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November 2005 MICRO 38: Proceedings of the 38th annual IEEE/ACM International Symposium on Microarchitecture

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abstract. references, cited by, index terms

This paper describes a scalable, low-complexity alternative to the conventional load/store queue (LSQ) for superscalar processors that execute load and store instructions speculatively and out-of-order prior to resolving their dependences. Whereas the ...

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April 2004 CF '04: Proceedings of the 1st conference on Computing frontiers **Publisher: ACM** 

Full text available: pdf(231.18 KB) Additional Information: full citation, abstract, references, cited by, index terms

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**Keywords**: cache memories, latency tolerance, prefetching, simultaneous multithreading, superscalar processors

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Ravi Rajwar, Maurice Herlihy, Konrad Lai

June 2005 ISCA '05: Proceedings of the 32nd annual international symposium on Computer Architecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(199.77 KB) Additional Information: full citation, abstract, cited by, index

Writing concurrent programs is difficult because of the complexity of ensuring proper synchronization. Conventional lock-based synchronization suffers from wellknown limitations, so researchers have considered non-blocking transactions as an alternative. ...

## Hybrid transactional memory



Sanjeev Kumar, Michael Chu, Christopher J. Hughes, Partha Kundu, Anthony Nguyen

March 2006 PPoPP '06: Proceedings of the eleventh ACM SIGPLAN symposium on Principles and practice of parallel programming

**Publisher: ACM** 

Full text available: pdf(782.57 KB) Additional Information: full citation, abstract, references, cited by, index terms

High performance parallel programs are currently difficult to write and debug. One major source of difficulty is protecting concurrent accesses to shared data with an appropriate synchronization mechanism. Locks are the most common mechanism but they ...

**Keywords**: architecture support, nonblocking, transactional memory, transactions

# High performance dynamic lock-free hash tables and list-based sets



Maged M. Michael

August 2002 SPAA '02: Proceedings of the fourteenth annual ACM symposium on Parallel algorithms and architectures

**Publisher: ACM** 

Full text available: pdf(238.11 KB) Additional Information: full citation, abstract, references, cited by, index terms

Lock-free (non-blocking) shared data structures promise more robust performance and reliability than conventional lock-based implementations. However, all prior lock-free algorithms for sets and hash tables suffer from serious drawbacks that prevent ...

## 15 Memory-efficient content filtering hardware for high-speed intrusion

detection systems

Sungwon Yi, Byoung-koo Kim, Jintae Oh, Jongsoo Jang, George Kesidis, Chita R. Das

March 2007 SAC '07: Proceedings of the 2007 ACM symposium on Applied

computing

Publisher: ACM

Full text available: pdf(161.42 KB) Additional Information: full citation, abstract, references, index terms

Content filtering-based Intrusion Detection Systems have been widely deployed in enterprise networks, and have become a standard measure to protect networks and network users from cyber attacks. Although several solutions have been proposed recently, ...

**Keywords**: FPGA, content filtering, deep packet instpection, intrusion detection systems, network security, pattern matching

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Kun Zhang, Tao Zhang, Santosh Pande

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International Symposium on Microarchitecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(274.63 KB) Additional Information: full citation, abstract, references, index terms

Current anomaly detection schemes focus on control flow monitoring. Recently, Chen et al. [2] discovered that a large category of attacks tamper program data but do not alter control flows. These attacks are not only realistic, but are also as important ...

## 17 Selection conditions in main memory

Kenneth A. Ross

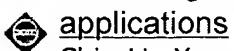
March 2004 ACM Transactions on Database Systems (TODS), Volume 29 Issue 1 Publisher: ACM

Full text available: pdf(296.54 KB) Additional Information: full citation, abstract, references, cited by, index terms

We consider the fundamental operation of applying a compound filtering condition to a set of records. With large main memories available cheaply, systems may choose to keep the data entirely in main memory, in order to improve query and/or update performance. The ...

Keywords: Branch misprediction

## 18 Tolerating memory latency through push prefetching for pointer-intensive



Chia-Lin Yang, Alvin R. Lebeck, Hung-Wei Tseng, Chien-Hao Lee December 2004 ACM Transactions on Architecture and Code Optimization (TACO), Volume 1 Issue 4

**Publisher: ACM** 

Full text available: pdf(590.24 KB) Additional Information: full citation, abstract, references, cited by, index terms

Prefetching is often used to overlap memory latency with computation for array-based applications. However, prefetching for pointer-intensive applications remains a challenge because of the irregular memory access pattern and pointer-chasing problem. ...

**Keywords**: Prefetch, linked data structures, memory hierarchy, pointerchasing

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Scott Lystig Fritchie

August 2003 ERLANG '03: Proceedings of the 2003 ACM SIGPLAN workshop on Erlang

Publisher: ACM

Full text available: pdf(232.17 KB) Additional Information: full citation, abstract, references, index terms

The viability of implementing an in-memory database, Erlang ETS, using a relatively-new data structure, called a Judy array, was studied by comparing the performance of ETS tables based on four data structures: AVL balanced binary trees, B-trees, resizable ...

**Keywords**: AVL tree, B-tree, Erlang, Judy array, hash table, in-memory database

## 20 An integrated hardware-software approach to flexible transactional

memory

Arrvindh Shriraman, Michael F. Spear, Hemayet Hossain, Virendra J. Marathe, Sandhya Dwarkadas, Michael L. Scott

June 2007 **ISCA '07:** Proceedings of the 34th annual international symposium on Computer architecture

**Publisher: ACM** 

Full text available: pdf(637.98 KB) Additional Information: full citation, abstract, references, index terms

There has been considerable recent interest in both hardware andsoftware transactional memory (TM). We present an intermediateapproach, in which hardware serves to accelerate a TM implementation controlled fundamentally by software. Specifically, we ...

Keywords: RSTM, cache coherence, multiprocessors, transactional memory

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Full text available: pdf(242.68 KB) Additional Information: full citation, abstract, references, cited by, index terms

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March 2004 ACM Transactions on Database Systems (TODS), Volume 29 Issue 1 **Publisher: ACM** 

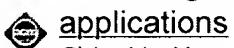
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## 19 A study of Erlang ETS table implementations and performance

Scott Lystig Fritchie

August 2003 ERLANG '03: Proceedings of the 2003 ACM SIGPLAN workshop on Erlang

Publisher: ACM

Full text available: pdf(232.17 KB) Additional Information: full citation, abstract, references, index terms

The viability of implementing an in-memory database, Erlang ETS, using a relatively-new data structure, called a Judy array, was studied by comparing the performance of ETS tables based on four data structures: AVL balanced binary trees, B-trees, resizable ...

**Keywords**: AVL tree, B-tree, Erlang, Judy array, hash table, in-memory database

## 20 An integrated hardware-software approach to flexible transactional

memory

Arrvindh Shriraman, Michael F. Spear, Hemayet Hossain, Virendra J. Marathe, Sandhya Dwarkadas, Michael L. Scott

June 2007 **ISCA '07:** Proceedings of the 34th annual international symposium on Computer architecture

**Publisher: ACM** 

Full text available: pdf(637.98 KB) Additional Information: full citation, abstract, references, index terms

There has been considerable recent interest in both hardware andsoftware transactional memory (TM). We present an intermediateapproach, in which hardware serves to accelerate a TM implementation controlled fundamentally by software. Specifically, we ...

**Keywords**: RSTM, cache coherence, multiprocessors, transactional memory

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Memory forwarding: enabling aggressive layout optimizations by

guaranteeing the safety of data relocation

Full text available: pdf(196.77 KB) Publisher Site

**(** 

Chi-Keung Luk, Todd C. Mowry

May 1999 ACM SIGARCH Computer Architecture News, Volume 27 Issue 2

**Publisher: ACM** 

Additional Information: full citation,

abstract, references, cited by,

index terms

By optimizing data layout at run-time, we can potentially enhance the performance of caches by actively creating spatial locality, facilitating prefetching, and avoiding cache conflicts and false sharing. Unfortunately, it is extremely difficult to guarantee ...

Information **Management** Trust SAS to manage your data & information- Get Info Now! www.SAS.com

Attested append-only memory: making adversaries stick to their word

Byung-Gon Chun, Petros Maniatis, Scott Shenker, John Kubiatowicz October 2007 SOSP '07: Proceedings of twenty-first ACM SIGOPS symposium on Operating systems principles

**Publisher: ACM** 

Full text available: pdf(361.31 KB) Additional Information: full citation, abstract, references, index terms

Researchers have made great strides in improving the fault tolerance of both centralized and replicated systems against arbitrary (Byzantine) faults. However, there are hard limits to how much can be done with entirely untrusted components; for example, ...

**Keywords**: attested append-only memory, byzantine-fault tolerance,

equivocation, replicated state machines, shared storage

Efficient use of memory bandwidth to improve network processor

throughput

Jahangir Hasan, Satish Chandra, T. N. Vijaykumar

June 2003 ISCA '03: Proceedings of the 30th annual international

symposium on Computer architecture

**Publisher: ACM** 

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full citation, abstract, references, cited by

We consider the efficiency of packet buffers used in packet switches built using network processors (NPs). Packet buffers are typically implemented using DRAM, which provides plentiful buffering at a reasonable cost. The problem we address is that a ...

Virtually Pipelined Network Memory

Banit Agrawal, Timothy Sherwood

December 2006 MICRO 39: Proceedings of the 39th Annual IEEE/ACM

International Symposium on Microarchitecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(256.77 KB) Additional Information: full citation, abstract,

references, index terms

We introduce virtually-pipelined memory, an architectural technique that efficiently supports high-bandwidth, uniform latency memory accesses, and high-confidence throughput even under adversarial conditions. We apply this technique to the network processing ...

Architectural Support for High Speed Protection of Memory Integrity and Confidentiality in Multiprocessor Systems

Weidong Shi, Hsien-Hsin S. Lee, Mrinmoy Ghosh, Chenghuai Lu September 2004 PACT '04: Proceedings of the 13th International Conference on Parallel Architectures and Compilation Techniques

Publisher: IEEE Computer Society

Full text available: pdf(255.33 KB) Additional Information: full citation, abstract, cited by

Recently there is a growing effort in both the architecture and the security community to create a hardware solution for authenticating system memory. As shown in the previous work, hardware-based memory authentication will become a vital component for ...

Efficient use of memory bandwidth to improve network processor

throughput

Jahangir Hasan, Satish Chandra, T. N. Vijaykumar May 2003 ACM SIGARCH Computer Architecture News, Volume 31 Issue 2 Publisher: ACM

Full text available: pdf(184.83 KB) Additional Information: full citation, abstract, references, cited by

We consider the efficiency of packet buffers used in packet switches built using network processors (NPs). Packet buffers are typically implemented using DRAM, which provides plentiful buffering at a reasonable cost. The problem we address is that a ...

Memory forwarding: enabling aggressive layout optimizations by guaranteeing the safety of data relocation

Chi-Keung Luk, Todd C. Mowry

May 1999 ISCA '99: Proceedings of the 26th annual international

symposium on Computer architecture

**Publisher:** IEEE Computer Society

Additional Information: full citation,

Full text available: pdf(196.77 KB) Publisher Site

abstract, references, cited by, index terms

By optimizing data layout at run-time, we can potentially enhance the performance of caches by actively creating spatial locality, facilitating prefetching, and avoiding cache conflicts and false sharing. Unfortunately, it is extremely difficult to guarantee ...

Accelerating sparse matrix computations via data compression

Jeremiah Willcock, Andrew Lumsdaine

June 2006 ICS '06: Proceedings of the 20th annual international conference on Supercomputing

**Publisher: ACM** 

Full text available: pdf(652.09 KB) Additional Information: full citation, abstract,

references, index terms

Sparse matrix computations are important for many scientific computations, with matrix-vector multiplication being a fundamental operation for modern iterative algorithms. For large sparse matrices, the primary performance limitation on matrix-vector ...

Keywords: data compression, high-performance computing, memory bandwidth, sparse matrix

Trajectory sampling for direct traffic observation

N. G. Duffield, Matthias Grossglauser

June 2001 IEEE/ACM Transactions on Networking (TON), Volume 9 Issue

Publisher: IEEE Press

Additional Information: full citation, abstract,

Full text available: pdf(251.55 KB)

references, cited by, index

terms

Traffic measurement is a critical component for the control and engine ering of communication networks. We argue that traffic measurement should make it possible to obtain the spatial flow of traffic through the domain, i.e., the paths followed by packets ...

**Keywords**: Hash functions, Internet traffic measurement, packet sampling, traffic engineering

Algorithms and data structures for flash memories

Eran Gal, Sivan Toledo

Full text available: pdf(343.39 KB)

June 2005 ACM Computing Surveys (CSUR), Volume 37 Issue 2

**Publisher: ACM** 

Additional Information: full citation, abstract,

references, cited by, index

terms

Flash memory is a type of electrically-erasable programmable read-only memory (EEPROM). Because flash memories are nonvolatile and relatively dense, they are now used to store files and other persistent objects in handheld computers, mobile phones, digital ...

Keywords: EEPROM memory, Flash memory, wear leveling

11 DejaView: a personal virtual computer recorder

Oren Laadan, Ricardo A. Baratto, Dan B. Phung, Shaya Potter, Jason Nieh October 2007 **SOSP '07:** Proceedings of twenty-first ACM SIGOPS symposium on Operating systems principles

**Publisher: ACM** 

Full text available: pdf(534.51 KB) Additional Information: full citation, abstract, references, index terms

As users interact with the world and their peers through their computers, it is becoming important to archive and later search the information that they have *viewed*. We present DejaView, a personal virtual computer recorder that provides a complete ...

Keywords: desktop search, virtualization

12 The V-Way Cache: Demand Based Associativity via Global

Replacement

Moinuddin K. Qureshi, David Thompson, Yale N. Patt May 2005 **ACM SIGARCH Computer Architecture News**, Volume 33 Issue 2 **Publisher:** ACM

Full text available: pdf(231.93 KB) Additional Information: full citation, abstract, cited by, index terms

As processor speeds increase and memory latency becomes more critical, intelligent design and management of secondary caches becomes increasingly important. The efficiency of current set-associative caches is reduced because programs exhibit a non-uniform ...

13 SpliceNP: a TCP splicer using a network processor

Li Zhao, Yan Luo, Laxmi Bhuyan, Ravi Iyer
October 2005 ANCS '05: Proceedings of the 2005 ACM symposium on
Architecture for networking and communications systems
Publisher: ACM

Additional Information: full citation, abstract,

Full text available: pdf(141.80 KB) references, cited by, index

terms

TCP Splicing can be used in content-aware switches to tremendously reduce overall request latency. In order to reduce the processing latency further, we propose to offload the protocol processing onto network processors (NPs). An NP consists of a multithreaded ...

Keywords: TCP splicing, network processors

## 14 A history of Erlang

Joe Armstrong

June 2007 HOPL III: Proceedings of the third ACM SIGPLAN conference on

History of programming languages

Publisher: ACM

Full text available: pdf(446.07 KB)

Additional Information: full citation, appendices and supplements, abstract,

references, index terms

Erlang was designed for writing concurrent programs that "run forever." Erlang uses concurrent processes to structure the program. These processes have no shared memory and communicate by asynchronous message passing. Erlang processes are lightweight ...

15 Threats to privacy in the forensic analysis of database systems

Patrick Stahlberg, Gerome Miklau, Brian Neil Levine
June 2007 **SIGMOD '07:** Proceedings of the 2007 ACM SIGMOD international conference on Management of data

**Publisher: ACM** 

Full text available: pdf(457.59 KB) Additional Information: full citation, abstract, references, index terms

The use of any modern computer system leaves unintended traces of expired data and remnants of users' past activities. In this paper, we investigate the unintended persistence of data stored in database systems. This data can be recovered by forensic ...

Keywords: forensics, privacy, transparency

16 Open multi-methods for c++

Peter Pirkelbauer, Yuriy Solodkyy, Bjarne Stroustrup
October 2007 GPCE '07: Proceedings of the 6th international conference on
Generative programming and component engineering

**Publisher: ACM** 

Full text available: pdf(427.67 KB) Additional Information: full citation, abstract, references, index terms

Multiple dispatch - the selection of a function to be invoked based on the dynamic type of two or more arguments - is a solution to several classical problems in object-oriented programming. Open multi-methods generalize multiple dispatch towards open-class ...

**Keywords**: C++, generic programming, multi-methods, multiple dispatch, object oriented programming, open-methods

17 Tree bitmap: hardware/software IP lookups with incremental updates

Will Eatherton, George Varghese, Zubin Dittia

April 2004 ACM SIGCOMM Computer Communication Review, Volume 34
Issue 2

Publisher: ACM

Full text available: pdf(189.39 KB) Additional Information: full citation, abstract, references, cited by

Even with the significant focus on IP address lookup in the published literature as well as focus on this market by commercial semiconductor vendors, there is still a challenge for router architects to find solutions that simultaneously meet 3 criteria: ...

18 Implementing an untrusted operating system on trusted hardware

David Lie, Chandramohan A. Thekkath, Mark Horowitz

December 2003 ACM SIGOPS Operating Systems Review, Volume 37 Issue

**Publisher: ACM** 

Additional Information: full citation, abstract,

Full text available: pdf(280.87 KB)

references, cited by, index

terms

Recently, there has been considerable interest in providing "trusted computing platforms" using hardware~---~TCPA and Palladium being the most publicly visible examples. In this paper we discuss our experience with building such a platform using a traditional ...

Keywords: XOM, XOMOS, untrusted operating systems

CAPTRA: coordinated packet traceback

Denh Sy, Lichun Bao

April 2006 IPSN '06: Proceedings of the fifth international conference on Information processing in sensor networks

**Publisher: ACM** 

Full text available: pdf(307.50 KB) Additional Information: full citation, abstract,

references, index terms

Network-based attacks can be either persistent or sporadic. Persistent attack flows can be relatively easy to trace by mechanisms such as probabilistic packet marking, traffic logging, data mining etc. Sporadic attacks are sometimes easily detected by ...

**Keywords**: bloom filter, packet traceback, wireless sensor networks

20 NPSE: A High Performance Network Packet Search Engine Naresh Soni, Nick Richardson, Lun-Bin Huang, Suresh Rajgopal, George **Vlantis** 

March 2003 DATE '03: Proceedings of the conference on Design, Automation and Test in Europe: Designers' Forum -**Volume 2**, Volume 2

**Publisher:** IEEE Computer Society

Additional Information: full citation,

Full text available: pdf(118.36 KB) Publisher Site

abstract, cited by, index terms

This paper describes the NPSE, a high-performance SRAM-based network packet search engine which has the primary application of supporting IPv4 and IPv6 forwarding. It is based on a high-speed hardware implementation of a tree-based storage and retrieval ...

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Non-uniform key distribution and address calculation sorting

Michael E. Tarter, Richard A. Kronmal

July 1966 Communications of the ACM, Volume 9 Issue 7

**Publisher: ACM** 

Full text available: pdf(654.43 KB) Additional Information: full citation

First price sealed bid auction without auctioneers

Shuo Zheng, Luke McAven, Yi Mu

August 2007 IWCMC '07: Proceedings of the 2007 international conference on Wireless communications and mobile computing

**Publisher: ACM** 

Full text available: pdf(129.27 KB) Additional Information: full citation, abstract, references,

index terms

We propose two protocol variants for a first price sealed-bid auction, without using intermediatory auctioneers. One version achieves full privacy for the bidders and their bids, the other provides a form of verifiability, at the cost of some privacy. ...

Keywords: auction, bit-commitment, first price, sealed-bid

Address-Indexed Memory Disambiguation and Store-to-Load Forwarding Sam S. Stone, Kevin M. Woley, Matthew I. Frank

November 2005 MICRO 38: Proceedings of the 38th annual IEEE/ACM International Symposium on Microarchitecture

**Publisher:** IEEE Computer Society

Full text available: pdf(301.30 KB) Publisher Site

Additional Information: full citation, abstract.

references, cited by, index terms

This paper describes a scalable, low-complexity alternative to the conventional load/store queue (LSQ) for superscalar processors that execute load and store instructions speculatively and out-of-order prior to resolving their dependences. Whereas the ...

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A compact FPGA implementation of the hash function whirlpool



Norbert Pramstaller, Christian Rechberger, Vincent Rijmen

February 2006 FPGA '06: Proceedings of the 2006 ACM/SIGDA 14th international

symposium on Field programmable gate arrays

**Publisher: ACM** 

Full text available: pdf(240.32 KB) Additional Information: full citation, abstract, references,

index terms

Recent breakthroughs in cryptanalysis of standard hash functions like SHA-1 and MD5 raise the need for alternatives. A credible alternative to for instance SHA-1 or the SHA-2 family of hash functions is Whirlpool. Whirlpool is a hash function that has ...

Keywords: FPGA, compact hardware implementation, hash function, whirlpool

Repairing return address stack for buffer overflow protection

Yong-Joon Park, Gyungho Lee

April 2004 CF '04: Proceedings of the 1st conference on Computing frontiers

Publisher: ACM

Full text available: pdf(197.90 KB) Additional Information: full citation, abstract, references, cited by, index terms

Although many defense mechanisms against buffer overflow attacks have been proposed, buffer overflow vulnerability in software is still one of the most prevalent vulnerabilities exploited. This paper proposes a micro-architecture based defense mechanism ...

**Keywords**: buffer overflow, computer architecture, computer security, intrusion tolerance

Implementing aggregation and broadcast over Distributed Hash Tables



Ji Li, Karen Sollins, Dah-Yoh Lim

January 2005 ACM SIGCOMM Computer Communication Review, Volume 35 Issue 1

Publisher: ACM

Full text available: pdf(391.51 KB)

Additional Information: full citation, abstract, references, cited by, index terms

Peer-to-peer (P2P) networks represent an effective way to share information, since there are no central points of failure or bottleneck. However, the flip side to the distributive nature of P2P networks is that it is not trivial to aggregate and broadcast ...

**Keywords**: aggregation, broadcast, distributed hash table, peer-to-peer, tree

High performance dynamic lock-free hash tables and list-based sets



Maged M. Michael

August 2002 SPAA '02: Proceedings of the fourteenth annual ACM symposium on Parallel algorithms and architectures

**Publisher: ACM** 

Full text available: pdf(238.11 KB)

Additional Information: full citation, abstract, references, cited by, index terms

Lock-free (non-blocking) shared data structures promise more robust performance and reliability than conventional lock-based implementations. However, all prior lock-free algorithms for sets and hash tables suffer from serious drawbacks that prevent ...

8 Partitioned first-level cache design for clustered microarchitectures

Paul Racunas, Yale N. Patt

June 2003 **ICS '03:** Proceedings of the 17th annual international conference on Supercomputing

**Publisher: ACM** 

Full text available: pdf(191.74 KB) Additional Information: full citation, abstract, references, cited by, index terms

The high clock frequencies of modern superscalar processors make the wire delay incurred in moving data across the processor chip a significant concern. As frequencies continue to increase, it will become more difficult for a centralized first level ...

Keywords: clustered microarchitecture, partitioned cache

9 A low-cost memory remapping scheme for address bus protection

Lan Gao, Jun Yang, Marek Chrobak, Youtao Zhang, San Nguyen, Hsien-Hsin S. Lee

September 2006 **PACT '06:** Proceedings of the 15th international conference on Parallel architectures and compilation techniques

**Publisher: ACM** 

Full text available: pdf(536.42 KB) Additional Information: full citation, abstract, references, index terms

The address sequence on the processor-memory bus can reveal abundant information about the control flow of a program. This can lead to critical information leakage such as encryption keys or proprietary algorithms. Addresses can be observed by attaching ...

**Keywords**: address bus leakage protection, secure processor

10 Substituting associative load queue with simple hash tables in out-of-order

microprocessors

Alok Garg, Fernando Castro, Michael Huang, Daniel Chaver, Luis Piñuel, Manuel Prieto

October 2006 **ISLPED '06:** Proceedings of the 2006 international symposium on Low power electronics and design

**Publisher: ACM** 

Full text available: pdf(174.77 KB) Additional Information: full citation, abstract, references, cited by, index terms

Buffering more in-flight instructions in an out-of-order microprocessor is a straightforward and effective method to help tolerate the long latencies generally associated with off-chip memory accesses. One of the main challenges of buffering a large ...

Keywords: LSQ, hash table, memory disambiguation, scalability

11 <u>Using Address Independent Seed Encryption and Bonsai Merkle Trees to Make Secure Processors OS- and Performance-Friendly</u>
Brian Rogers, Siddhartha Chhabra, Milos Prvulovic, Yan Solihin December 2007 **MICRO '07:** Proceedings of the 40th Annual IEEE/ACM

International Symposium on Microarchitecture

Publisher: IEEE Computer Society

Full text available: pdf(954.09 KB) Additional Information: full citation, abstract

In today's digital world, computer security issues have become increasingly important. In particular, researchers have proposed designs for secure processors which utilize hardware-based mem- ory encryption and integrity verification to protect the privacy ...

12 Improving hash join performance through prefetching

Shimin Chen, Anastassia Ailamaki, Phillip B. Gibbons, Todd C. Mowry
August 2007 ACM Transactions on Database Systems (TODS), Volume 32 Issue

Publisher: ACM

Full text available: pdf(904.25 KB) Additional Information: full citation, abstract, references, index terms

Hash join algorithms suffer from extensive CPU cache stalls. This article shows that the standard hash join algorithm for disk-oriented databases (i.e. GRACE) spends over 80% of its user time stalled on CPU cache misses, and explores the use of ...

**Keywords**: CPU cache performance, CPU cache prefetching, Hash join, group prefetching, software-pipelined prefetching

# 13 <u>A Peer-to-Peer Replica Location Service Based on a Distributed Hash</u> <u>Table</u>

Min Cai, Ann Chervenak, Martin Frank

November 2004 **SC '04:** Proceedings of the 2004 ACM/IEEE conference on Supercomputing

**Publisher:** IEEE Computer Society

Full text available: pdf(343.25 KB) Additional Information: full citation, abstract, references, cited by

A Replica Location Service (RLS) allows registration and discovery of data replicas. In earlier work, we proposed an RLS framework and described the performance and scalability of an RLS implementation in Globus Toolkit Version 3.0. In this paper, we ...

Keywords: Algorithms, Experimentation, Grid, Peer-to-Peer, Replication

## 14 Correlated load-address predictors

Michael Bekerman, Stephan Jourdan, Ronny Ronen, Gilad Kirshenboim, Lihu Rappoport, Adi Yoaz, Uri Weiser

May 1999 ACM SIGARCH Computer Architecture News, Volume 27 Issue 2 Publisher: ACM

Additional Information: full citation,

Full text available: pdf(149.18 KB) Publisher Site

abstract, references, cited by, index terms

As microprocessors become faster, the relative performance cost of memory accesses increases. Bigger and faster caches significantly reduce the absolute load-to-use time delay. However, increase in processor operational frequencies impairs the relative ...

**Keywords**: context-based predictor, global correlation, load-address prediction, predictor implementation, recursive data structures

## 15 Register Packing: Exploiting Narrow-Width Operands for Reducing Register File Pressure

Oguz Ergin, Deniz Balkan, Kanad Ghose, Dmitry Ponomarev

December 2004 MICRO 37: Proceedings of the 37th annual IEEE/ACM

International Symposium on Microarchitecture

**Publisher: IEEE Computer Society** 

Full text available: pdf(224.06 KB) Additional Information: full citation, abstract, cited by

A large percentage of computed results have fewer significant bits compared to the full width of a register. We exploit this fact to pack multiple results into a single physical register to reduce the pressure on the register file in a superscalar processor. ...

### 16 Correlated load-address predictors

Michael Bekerman, Stephan Jourdan, Ronny Ronen, Gilad Kirshenboim, Lihu Rappoport, Adi Yoaz, Uri Weiser

May 1999 ISCA '99: Proceedings of the 26th annual international symposium on Computer architecture

**Publisher: IEEE Computer Society** 

Additional Information: full citation,

Full text available: pdf(149.18 KB) Publisher Site

abstract. references, cited by, index terms

As microprocessors become faster, the relative performance cost of memory accesses increases. Bigger and faster caches significantly reduce the absolute load-to-use time delay. However, increase in processor operational frequencies impairs the relative ...

**Keywords**: context-based predictor, global correlation, load-address prediction, predictor implementation, recursive data structures

## Simultaneous reference allocation in code generation for dual data

memory bank ASIPs

Ashok Sudarsanam, Sharad Malik

April 2000 ACM Transactions on Design Automation of Electronic Systems (TODAES), Volume 5 Issue 2

Publisher: ACM

Full text available: pdf(156.30 KB) Additional Information: full citation, abstract, references, cited by, index terms

We address the problem of code generation for DSP systems on a chip. In such systems, the amount of silicon devoted of program ROM is limited, so application software must be sufficiently dense. Additionally, the software must be written so as to meet ...

**Keywords**: code generation, code optimization, graph labelling, memory bank assignment, register allocation

# Mercury: supporting scalable multi-attribute range queries

Ashwin R. Bharambe, Mukesh Agrawal, Srinivasan Seshan

August 2004 ACM SIGCOMM Computer Communication Review, Volume 34

**Publisher: ACM** 

Additional Information:

Full text available: pdf(1.29 MB)

full citation, abstract, references, cited by, index terms

This paper presents the design of Mercury, a scalable protocol for supporting multi-attribute range-based searches. Mercury differs from previous range-based query systems in that it supports *multiple attributes* as well as performs *explicit* ...

**Keywords**: distributed hash tables, load balancing, peer-to-peer systems, random sampling, range queries

19 A privacy enhancing mechanism based on pseudonyms for identity protection in location-based services

Oliver Jorns, Gerald Quirchmayr, Oliver Jung

January 2007 ACSW '07: Proceedings of the fifth Australasian symposium on ACSW frontiers - Volume 68, Volume 68

Publisher: Australian Computer Society, Inc.

Full text available: pdf(333.09 KB) Additional Information: full citation, abstract, references

Over the past years Mobile Business has gained significant progress not only because of higher transfer rates as well as advanced processing power and memory capabilities of networks and mobile devices but also because of novel location-based mobile ...

**Keywords**: hash function, identity management, location-based services, privacy, pseudonyms, security, telecommunication services

20 Cryptography as an operating system service: A case study

Angelos D. Keromytis, Jason L. Wright, Theo De Raadt, Matthew Burnside February 2006 ACM Transactions on Computer Systems (TOCS), Volume 24 Issue 1

**Publisher: ACM** 

Full text available: pdf(669.12 KB) Additional Information: full citation, abstract, references, index terms, review

Cryptographic transformations are a fundamental building block in many security applications and protocols. To improve performance, several vendors market hardware accelerator cards. However, until now no operating system provided a mechanism that allowed ...

**Keywords**: Encryption, authentication, cryptographic protocols, digital signatures, hash functions

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Nov. 2006 Page(s):280 - 284

Digital Object Identifier 10.1109/LCN.2006.322112

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2. A Hardware-Engine for Layer-2 classification in low-storage, ultra high bandwidth Papaefstathiou, V.; Papaefstathiou, I.; Design, Automation and Test in Europe, 2006. DATE '06. Proceedings Volume 2, 6-10 March 2006 Page(s):1 - 6

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3. A memory efficient, 100 Gb/sec MAC classification engine 

Papaefstathiou, V.; Papaefstathiou, I.;

Local Computer Networks, 2005. 30th Anniversary. The IEEE Conference on

15-17 Nov. 2005 Page(s):2 pp.

Digital Object Identifier 10.1109/LCN.2005.9

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hash table and memory MAC address



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PID hash table entries: 64 (order 6: 512 bytes) Using 120.000 MHz high ... 2006 19:39:17
usb0: MAC Address: 00 11 F5 E6 9D 00 usb0: Host MAC Address: 00 11 ...
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A Memory Efficient, 100 Gb/sec MAC Classification Engine (HBCE) compacts the MAC address tables and supports high speed decisions using significantly less. memory than the existing solutions. 2. Hash Based ... ieeexplore.ieee.org/iel5/10397/33047/01550891.pdf? isnumber=33047&prod=CNF&arnumber=1550891&ar... - Similar pages

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Freeing unused kernel **memory**: 56k freed (0x12b000 - 0x138000) ... FLASH: 4 MB In: serial Out: serial Err: serial Using **MAC Address** 92:65:09:D1:3C:71 Bus 0: ... blackfin.uclinux.org/gf/project/u-boot/tracker/? action=TrackerItemEdit&tracker\_item\_id=1735 - 36k - <u>Cached</u> - <u>Similar pages</u>

Computer-based system for validating hash-based table lookup ... 6438674, Perloff, 711/216, Hash Cam having a reduced size memory array and its ..... In particular, a user may program the address table 44 with MAC and IP ... www.freepatentsonline.com/6757742.html - 52k - Cached - Similar pages

Samsung SWL-2100P no MAC address

2392.06 BogoMIPS **Memory**: 256960k/262064k available (974k kernel code, 4716k reserved, 395k data, 84k init, 0k highmem) Dentry cache **hash table** entries: ... lists.shmoo.com/pipermail/hostap/2003-March/001898.html - 13k - <u>Cached</u> - <u>Similar pages</u>

Mac OS X Manual Page For Hash(3tcl)

Tcl\_DeleteHashTable deletes all of the entries in a **hash table** and frees up the **memory** associated with the **table's** bucket array and entries. ... developer.apple.com/documentation/Darwin/Reference/ManPages/man3/**Hash**.3tcl.html - 26k - Cached - Similar pages

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... of MAC Addresses (1-32): 3 Ethernet MAC Address: 00:11:f5:cf:1b:0a Memory ... TCP, IGMP IP: routing cache hash table of 512 buckets, 4Kbytes TCP: Hash ... jcsu.jesus.cam.ac.uk/~acw43/projects/voyager/serial.html - 8k - Cached - Similar pages

#### ARM9 SBC

... 32768 bytes) Inode-cache hash table entries: 4096 (order: 2, 16384 bytes) Memory: 32MB ... Configuring network interfaces...eth0: Setting MAC address to ... www.ime.usp.br/~fr/sbc/ - 14k - Cached - Similar pages

Amitesh Singh - Can I change 'RedBoot Config' using MTD driver.?

... bytes) Inode-cache hash table entries: 8192 (order: 3, 32768 bytes) Memory: .... OK +

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Content-addressable memory - Wikipedia, the free encyclopedia
Content-addressable memory (CAM) is a special type of computer memory used in ... The
MAC address table is usually implemented with a binary CAM so the ...
en.wikipedia.org/wiki/Content-addressable\_memory - 28k - Cached - Similar pages

The ARP cache structure of lan emulation server in ATM-LAN system ... address. For a given hash table with m cache entries with. total of n MAC-ATM binding information, ... Comparand was found in memory. Thus, with a CAM, ... ieeexplore.ieee.org/iel5/6630/17685/00818389.pdf - Similar pages

OpenWrt / ASUS WL-600g Serial connection log

Board IP address: 192 Inode-cache hash table entries: 2048 (order: 1, 8192 bytes) Host IP address: 192.168.1.100 Memory: 13340k/16000k available (1578k ... forum.openwrt.org/viewtopic.php?pid=62517 - 23k - Cached - Similar pages

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DRAM offers 28 times the density of the largest **CAM** or SRAM (512 Mbit versus .... VPLS **tables** to **memory** mapping. The MPLS tunnel **hash table** and the **MAC hash** ... www.ezchip.com/t\_memory\_whpaper.htm - 29k - Cached - Similar pages

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Using MAC Address FF:FF:FF:FF:FF:FF TFTP from server 10.100.4.174; our IP address is 10.100. .... TCP: Hash tables configured (established 2048 bind 2048) ... blackfin.uclinux.org/gf/project/uclinux-dist/mailman/? action=ListThreads&mailman\_id=41&\_forum\_act... - 31k - <u>Cached - Similar pages</u>

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210.53 BogoMIPS **Memory**: 14140k/16000k available (1148k kernel code, 1860k reserved, 84k data, 4) Dentry-cache **hash table** entries: 2048 (order: 2, ... jcsu.jesus.cam.ac.uk/~acw43/projects/voyager/serial.html - 8k - <u>Cached</u> - <u>Similar pages</u>

#### Details and datasheet on part: RTL8316

Address look-up table consists of 8K entries of hash table and a 128 entries of CAM. The RTL8308B uses address hashing algorithm or direct mapping method to ... www.digchip.com/datasheets/parts/datasheet/398/RTL8316.php - 17k -

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